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The recent interest in reflective teaching has resulted in a number of studies in which reflective teaching is proposed as an important aim to be achieved through teacher education programs. Programs for the development of reflective teaching have been proposed, however, attempts at clarifying the meaning of reflective teaching have been scarce. This study proposes an eclectic frame of reference of reflective teaching based upon an analysis of reflection, of professional knowledge, and on the juxtaposition of these two concepts. This juxtaposition generates a mapping sentence that consists of several facets and elements and thus provides the proposed eclectic frame of reference. Theoretically, this mapping sentence may serve as a source for the derivation of research hypotheses, practically it is apt to guide practitioners in teacher education. (Author)

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REFLECTION AND PROFESSIONAL KNOWLEDGE-A CONCEPTUAL FRAMEWORK

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ABSTRACT

The recent interest in reflective teaching has resulted in a number of studies in which reflective teaching is proposed as an important aim to be achieved through teacher education programs. Programs for the development of reflective teaching have been proposed, however, attempts at clarifying the meaning of reflective teaching have been scarce. This study proposes an eclectic frame of reference of reflective teaching based upon an analysis of reflection, of professional knowledge and on the juxtaposition of these two concepts. This juxtaposition generates a mapping sentence that consists of several facets and elements and thus provides the proposed eclectic frame of reference. Theoretically, this mapping sentence may serve as a source for the derivation of research hypotheses, practically it is apt to guide practitioners in teacher education.

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REFLECTION AND PROFESSIONAL KNOWLEDGE-A CONCEPTUAL FRAMEWORK

PERSPECTIVE

The topic of reflection in teaching has recently attracted the interest of educational researchers and consequently captured a significant part of the educational literature. The number of studies devoted to this subject is growing constantly. "Why does the recent educational scene entertain **reflection** to such an extent?", one may wonder, "what have teachers been doing all these years, have they not reflected?" A negative answer to the latter question will do injustice to many teachers and distort the image of educational realities. History reveals a number of "reflective" great teachers too large to mention here. The "rise of reflection" in teaching, as a topic of research and one that deserves to be encouraged in teacher professional development programs, may be understood on the background of the interest in teacher thinking. Considering the developmental phenomenon of differentiation of knowledge, reflection may be conceived of as one particular aspect of thinking. Practically, this interest is embedded in the process of professionalization of teaching , and in the societal demand for accountability.

The present study suggests that the literature on reflective teaching has limited itself to a great extent to a declared ideology concerning the desirability of reflection in teaching and consequently to the need to include it as a central aim in teacher education programs. Programs and models

for developing reflective teaching have been described in a number of studies (Berlak & Berlak, 1981, Peters, 1985, Zeichner & Liston 1987) ,however, it appears that no systematic attempts to clarify and elaborate upon the concept itself have been made, and no specific research questions have been posed. The meanings of reflection that have been forwarded are too general and ambiguous to guide research studies and educational practices. The variety of conceptions and descriptions offered in to-day's literature may enrich the field of inquiry but may also lead to vagueness and misunderstandings, if no clarification of the concept is forwarded. (Clandinin & Connelly, 1986). Clark s suggestion that after ten years of research on teacher thinking, it is time to "chart a new course for research on teacher thinking"(1986, p. 15), and Shulman's call for a disciplined inquiry regarding the concept of pedagogical knowledge (1987), may well be translated into the need to clarify and to investigate the concept of reflective teaching. Furthermore, following the line of thought that underlied ringer s call for the discovery of the "language of practice" (1985), we advocate the importance of the discovery of a language , or rather of languages of teacher reflection.

In view of the differing educational perceptions and attitudes, no one definiton or any single way of describing reflective teaching is to be expected or desired. However, a conceptual framework of reference which will point out the various elements of reflective teaching and their potential interactions may prove to be helpful in broadening the perspective of this concept for both theoretical and

practical purposes. Such a frame of reference is apt to guide researchers in the derivation of hypotheses and practitioners in better understanding teachers reflection and in designing programs for its development. A frame of reference calls for the clarification of the concepts that it hosts, which in the present case are: **reflection** and **professional knowledge.** One must keep in mind that reflection is a process, a form of thinking, and as such it has to have a content of reference, as no process is independent of the content on which it occurs. It is only natural to expect that the content of teachers reflection will be professional and based on pedagogical knowledge. One may hope, for instance, that the reflection of a graduate of a university teacher education program will differ from the one of a university graduate who has not undergone through such a program, should the latter have a chance to teach. How will, or how should it differ? What will be the characteristics of a professional teacher s reflection? Can reflective teaching be developed? Do teacher educators have a frame of reference to guide them in trying to encourage reflective thinking in their students? In attempt at answering these and similar questions reserachers as well aspractitioners may well profit from a conceptual frame of reference.

In the next paragraphs the concepts of **Reflection and Professional Knowledge** will be elaborated upon and juxtaposed upon each other to form a basis of a conceptual frame of reference.

THE CONCEPT OF REFLECTION

Reflection has been described in the educational literature

in many different ways. Lowyck (1986) points to the difficulty in arriving at an agreement regarding the definition of the concept, because of lack of conceptualization and empirical research. A brief review of the relatively current literature on reflection of its processes and styles follows:

It was Dewey at the onset of this century that mentioned the term reflection in making the distinction between routine and reflective teaching, the latter being characterized by active, persistent and careful consideration of ends and means, by relating them to social, educational and political contexts (Dewey,1933). He suggested three prerequisites for reflective teaching: Openmindedness; Responsibility, and Wholeheartedness. Fully accepting that these are necessary conditions, one may at the same time doubt whether they are sufficient. The concept as it is perceived to-day encompasses a wider range of connotations and meanings and the question of what the prerequisites of reflective teaching are, still present a challenge to educational researchers.

How is reflection perceived in more recent studies?

Mckay & Marland (1978) refer to reflection as to a category of interactive thoughts, and as to a process of teachers thoughts on past occurences in the classroom. According to these authors , reflection concerns only teaching behaviors that have not been actualized. This perception presents serious limitations to the concept. In referring to evaluation as a "phase of teaching whereby teachers assess their plans and accomplishments and so revise them for the

future", Shavelson & Stern (1981 p.471) actually describe one aspect of reflection, although they don t use the term itself. Clark & Peterson (1986) relate to reflection in more general terms, as post-active thoughts, and Lowyck (1986 p. 173) uses the term "post-interactive reflection" to describe the informaton processing activities of the teacher " after a lesson or a broader unit of time". He perceives post-interactive reflection as a present activity with reference to past experiences. Grant & Zeichner (1984) claim that "reflective teaching occurs when you question and clarify why you have chosen your classroom materials, procedures and content". They define reflection as an ongoing process that involves re-examination of what was done, and as thinking analytically about goals and actions in order to achieve better results. They add that "the reflective teacher is dedicated and committed to teaching all students". The latter quotation entails a value orientation, which does not clarify the process itself, as a teacher may be reflective, but this does not necessarilly indicate which value orientates his/her reflection , or what is the subject of his/her dedication. The attachment of values to reflection may well guide program development, but it also may contaminate the description of the process as such. At a stage of analysis, process and value must be separated. They may, however, be later combined for practical purposes.

An additional description of a reflective teacher was suggested in the student-teaching program at the University of Wisconsin (Zeichner & Liston, 1987). Accordingly, "a reflective teacher is one who assesses the origins,

purposes, and consequences of his/her work". The process of reflection is, according to this descripton, a process of assessment. The image of a reflective teacher that these authors have in mind when proposing a program for the development of reflective teachers, is one who views knowledge as problematic rather than certain, the role of teaching as a moral craft rather than one of a technician, the curriculum as reflexive rather than received, and the milieu as a topic of inquiry rather than one that is determined in a hierarchical manner.

In "New thoughts on teacher education " Solomon (1987) suggests that reflection mediates between past experiences, actions, personal theorising, and understanding of received theories. It is a re-exploration of past experiences. Its value lies, according to her opinion, in the slow construction of personal knowledge and meanings.

An additional aspect of the reflection process was proposed by Schon who in describing it as a tacit process: "a person doesn t stop to tell himself- now I am reflecting ... it is very often unconscious and can't be explained in words" (Schon, 1983, pp. 50).

In interviewing a group of student teachers supervisors, Korthagen (1987) found that they had a relatively clear image of the "most reflective teacher" but that they could not describe what they had in mind when referring to a "least reflective teacher". This finding is rather interesting as it raises two questoins worthwhile of consideration: Assuming that the development of a reflective teacher is an important aim of teacher education and that the attempt to facilitate

a tutee s growth has to start at the level of that tutee, but at the same time this level cannot be diagnosed. what will be the baseline to start with? Furhermore, is "least" and "more" reflective teaching a matter of quality or of quantity? Can levels of reflection be described along one continuum, or should they rather require several continua for this purpose? Gilbert Ryle (1949) proposes that " what distinguishes sensible from silly actions is not their percentage but their quality"; is this also true for reflection?

In addition to the references made in relation to reflective teaching as a process, several styles of reflection have been suggested. In one categorization made by Van Manen (1977) a distinction was made between three styles of reflection: technical rationality, linkage of assumptions underlying practical actions with particular value commitment, and incorporation of moral and ethical values into the discourse of practical actions. Following this categorization, Zeichner & Liston (1987) describe several types of teachers: one is a technician, who is interested in achieving goals that have been decided upon by others, another is a craftsperson who is interested in the rationale for conducting educational activities and in the quality of the achievements,and a third type of teacher is the moral craftsperson who is interested in the moral and ethical implications of educational activities. Schon (1983 p.68) uses the term "reflective practitioner" to describe one "who is not dependent on the categories of established theory and technique , but constructs a new theory of the unique case.

His inquiry is not limited to a deliberation about means which depends on a prior agreement about ends. He does not keep ends and means separate, but defines them interactively as he frames a problematic situation. He does not separate thinking from doing ...reflection in action can proceed in situations of uncertainty or uniqueness, because it is not bound by the dichotomies of Technical Rationality". On the other hand, some practitioners "view themselves as technical experts" too skillful in their performance to detect problems to reflect upon. They use techniques to "preserve the constancy of their knowledge. For them uncertainty is a threat, its admission is a sign of weakness".Is this a description of the "less reflective" teacher? Is it a description of a dogmatic teacher? These are some questions that may have to be answered by extensive rigorous research. Schon himself suggests that "reflection in action is an extraordinary process, however not a rare event." Interestingly enough, Schon does not attach content values to his description of reflection in action, it appears that for him reflection is a value in itself.

From the analysis of the literature on reflective teaching several salient categories emerge:

A Time Element - pertains to the question of when does the reflection occur: in the present about past experiences (post-active thoughts),, or in the present about on-going experiences (intra-active thoughts)..

Level and Style of Reference - The differentiation between a level of understanding ("question and clarify why", Grant & Zeichner, 1984) and analytical thinking and assessment

(Zeichner & Liston, 1987) may serve as categories of levels of reflection. The distinction between styles is well illustrated by Technical Rationality and Professional Reflection in Action, the latter involving an element of inquiry and creativity and the former an adherence to a-priori rules and norms. These two styles may be placed along a continuum, the one end of which refers to Technical Rationality and the other to Reflection in Action.

Orientation - pertains to the different foci toward which reflection is directed and which are illustrated by the distinction between a perception of knowledge and of curriculum as problematic rather than certain ; by the milieu as a topic of inquiry rather than imposed (Zeichner & Liston, 1987); by a practical vs. a moral and ethical committment (Van Manen, 1977), and by a narrow vs. broad context of reference. This brief review of the literature on reflective teaching is summarized and analyzed into categories of reference in Table 1.

Insert Table 1 about here

Following this review on processes of reflection in teaching some elaboration upon professional-pedagogical knowledge, the content of these processes is in order.

PROFESSIONAL-PEDAGOGICAL KNOWLEDGE

Attempts at understanding knowledge have a history too long to be cited here. For the present purposes only a glimpse into more recent studies is brought up to shed some light on the concept and serve as background for the description of

professional knowledge.

In a historical review of perceptions of knowledge written for educational purposes, Broudy (1977 p.1) relates to the distinction made by Kant between a- priori and a posteriori knowledge and between intuitive knowledge of principles and empirical knowledge of facts. Similarly, Lampert (1984) makes a distinction between intuitive knowledge that each individual builds from personal experience and which is not necessarily explicit and between formal knowledge that is taught in a systematic manner in schools. A basic distinction between knowing **that** and knowing **how** was made by Ryle (1949). This distinction was followed by many, sometimes using different terms for the same meaning. For instance, Hoz (1987) used the terms "declarative" and "procedural" knowledge in a similar sense: the first kind of knowledge pertains to facts, organized either in small units or in large schemes, the latter pertains to the mental operations that occur with the declarative knowledge. This classification between knowing that and knowing how was enriched by Broudy (ibid.) by a third category of knowing **with**, which furnishes a context within which a certain situation is perceived, interpreted and judged. Contexts can function without being at the center of consciousness or being recalled verbatim, they can be regarded as patterns, and as a form of tacit knowledge. They can be built of items that had once been at the focus of attention and have been learnt explicitly . they can be cognitive, affective, aesthetic, moral, social or religious. Another classification that Broudy elaborates upon is the one

between scientific and positivistic knowledeqe on the one hand, and between humanistic knowledqe on the other. A positivistic theory will not accept conscience, anxiety, remorse, hopes as topics of research. Differences between scientific and humanistic knowledqe engender a clash between two cultures and occurs in debates about curriculum , validity vs. utility, between the quality of a body of knowledqe - concepts, relations, theories, modes of inquiry - and its usefulness. Broudy illustrates this difference by the following two questions: "What is good Physics?" "What is physics good for?" However, these distinctions do not have to be viewed in an "either or" manner, as dichotomies, but rather as a matter of extent, of more or less, of being characterized to a qreater or less extent by a certain knowledqe characteristic.

Novak (1977) brought up the issue of relativity. He proposed that the existence of a myth of scientific method is prevalent in the society at larqe. However, in view of changes that occured in the perception of knowledqe and in its sources , an attitude of relativity might serve well the purpose of knowledqe analysis. A look into history may illustrate the point: The Greek and Roman writinqs that served for a relatively long time as sources of all knowledqe in Western societies, were abandoned as a result of later thoughts expressed by Copernicos in the 16th and by Galileo in the 17th centuries. Later, beliefs in experiential and systematic observations as sources of discovery of truth and the positivistic school of thought advocated by Comte qave way to different views of knowledqe.More recently, a

conception of the nature of the practitioner s knowledge was suggested by Polanyi (1964), who introduced the concept of tacit knowledge. This kind of knowledge can be viewd on a continuum, with recognition clues which are almost ineffable, at the one end, and with cummulative understanding, which is usually non-verbal, but which can be retrieved with the aid of conscious refleciton to test against another knowledge, at the other end. In sum, the translation of these views to the topic under study points to a distinction between two main orientations that are relevant to professional-pedagogical knowledge: the one connotes structure, absolutism, positivism, rules and norms, validity, the other connotes fluidity, relativism, humanism, utility. Both orientations may be viewed along a continuum of tacit knowledge. A more specific and operational description of pedagogical knowledge was proposed by Shulman (1987), in response to a call for a systematic inquiry into pedagogical knowledge that he himself made. (*)

An analysis of Shulman s propositons (ibid.) points to two main categories: Content and Form. Content was further classified into several sub-categories: 1)content knowledge of the field to be taught,the understanding of its structure and organization into concepts and principles at various thought levels. Several knowledge classifications made by Bloom, Gagne, Schwab , may be of help for this purpose.2) Pedagogical content knowledge pertains to the application of the content knowledge to teaching and involves the representation of that content in a comprehensible, relevant manner, using a variety of alternatives to suit pupils

(*) In this article the term "professional" rather than pedagogical, will be used, as it seems that it is more inclusive: the term "professional" when referred to teaching and education connotes pedagogy. Nevertheless, we shall use the term "professional-pedagogical knowledge" to prevent possible misunderstanding and to allow for a wider range of connotations.

individual differences in various aspects, and 3)Curricular knowledge pertains to the familiarity with a variety of learning materials not only in one s own subject of teaching but in other subjects that the pupils are learning as well. Form of knowledge was classified into: 1)Propositonal knowledge that entertains research based principles , experience based recommendations organized in some theoretical framework, 2) Case knowledge that complements the former kind of knowledge by providing knowledge of specifics which are well documented and which are representative of an educational issue or phenomenon, and 3) Strategic knowledge that involves "careful confrontation of principles with cases , of general rules with concrete events...when two principles are in conflict or when two cases yield contradictory interpretations.. (ibid. p. 13). In some studies attempts were made as detecting differences in the perceptions of university teacher educators and school educators with regard to what constitutes crucial professional knowledge objectives. The profile obtained for the university educators entailed knowledge about students , about the social context of schooling, and about curriculum. The emphasis was on theoretical and general knowledge that underly the framework of teacher decision making as well as on reflective teaching skills. The school educators profile entailed an attached importance to knowledge about teachers and teaching strategies with an emphasis on particularistic knowledge that relates directly to immediate and daily decision making (Schumacher, Rommel-Esham & Bauer, 1987).

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between folkways and private views may also be compared to the one between technical rationality and reflection in action.

Because of the broad scope and extensive analysis of pedagogical knowledge in Shulman s study, the present investigation will borrow mainly from its proposed categories.

Table 2 presents a summary and analysis of the various perception of knowledge in general and of professional-pedagogical knowledge in particular.

Insert Table 2 about here

The summary presented in Table 2 yields the following broad knowledge categories: Content - including subject-matter content, pedagogical and curricular knowledge, and form - including propositions , cases and strategies. Each one of the content categories may be processed by each of the form categories and both kind of categories may be viewed through each of the two main orientations mentioned above, one being relatively "closed", that is, characterized by a positivistic attitude, by structure, rules and norms, and the other characterized by a more "open" orientation and by an attitude of relativity, flexibility and fluidity.

Reflection and professional-pedagogical knowledge may now be juxtaposed to constitute a conceptual framework.

REFLECTION AND PROFESSIONAL-PEDAGOGICAL KNOWLEDGE

The clarification of the concepts under study provides the basis for a systematic compositon of a conceptual framework

that will incorporate both concepts as well as the possible relations between them. Such a conceptual framework may be obtained with the aid of a mapping sentence, in which each concept component constitutes a facet, and the varying perceptions of that concept constitute an element of the facet. Facets are here used in the sense of classification criteria pertaining to a certain domain of content (Guttman, 1954). Such a mapping sentence, according to Guttman s theory, provides a conceptual framework and paradigm for further investigations and for the derivation of research hypotheses.

In view of the various attributes of reflection and of professional-pedagogical knowledge it is interesting to disclose the ways in which these two concepts co-exist, and whether any concept structure may be detected. The mapping sentence illustrated in figure 3 is proposed for this purpose:

Insert figure 1 about here

The inner structure of reflection based on professional-pedagogical knowledge may be obtained by the aid of a questionnaire consisting of items that represent each of the elements of the various facets. The number of items will equal the product of the number of elements in facet A, multiplied by the number of elements in facet B, and in turn multiplied by the number of elements in each of the other facets.

A smallest Space Analysis (SSA, Lingoes, 1968) will point to the distances between all elements and thus provide profiles

of various inner structures of professional reflective teaching, namely: how do the different elements interact with each other. Profiles built on data obtained from various groups of teachers are apt to point to the differences among them with regard to the characteristics of their professional reflection on teaching. Thus, questions such as the following may be answered: Is the profile of reflective teaching of elementary school teachers different from that of high school teachers, and if it is - what is it? Is it in the level of reflection , is it on the type of knowledge that is reflected upon, etc. Similar questions may be answered with regard to teachers at various stages in their career, to teachers of varying personalities and in various circumstances and situations.

Theoretically, the suggested mapping sentence including its facets and elements may serve a conceptual framework for deriving hypotheses and for testing them. Naturally, not all facets must be used in any one single research. The facets to be used will depend upon the research questions. Practically, information on the profiles of teachers perceptions regarding reflective teaching may serve a mirror for teachers self confrontation which in turn may arouse awareness to gaps and deficiencies in their perspective, and consequently motivate to fill in these gaps. Profiles of teachers at various stages of their career, in varying environments may guide the planning and implementation of teacher professional development programs at the pre- and in-service stages.

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Table 1 - References to reflection in recent educational literature

Author	Year	Process description	classification with regard to:			Time perspective
			thought level	orientation	style	
Dewey	1933	Active, persistent consideration of ends and means	Analysis	Broad context of social political and educational aspects	routine/reflection	retrospection
Van Maanen	1977	Application, analysis, evaluation.	critical analysis	value committment social roles	technical/deliberative rationality	
Mc Kay & Marland	1978	Cognitive activities, thoughts on past experiences	general not specified			retrospection
Shavelson & Stern	1981	Assessment of plans and accomplishments	analysis, judgment			retrospection for future purposes
Schon	1983	tacit, unconscious process, interactive view of means & ends, theory construction out of unique cases.	analysis, synthesis, creativity	practice, professional	technical rationality/reflection in action	retrospection present-intra active
Grant & Zeichner	1984	questioning, clarifying, re-examining	analysis	committment to all students, ethical/practical		
Clark & Peterson	1986	post-active thoughts	general, not specified			retrospection
Lowyck	1986	post interactive thoughts, information processing activities after teaching			systematic/spontaneous; frequent/sporadic	retrospection
Zeichner & Liston	1987	assessment of purposes and consequences	analysis synthesis judgment	view of knowledge as problematic, of teacher's role as moral craft of curriculum as reflexive	technician craftsman moral craftsman	retrospection
Solomon	1987	mediation between past experiences, personal knowledge and theory re-explorations of experiences	analysis synthesis	situational context		

Table 2 - Categories of knowledge derived from recent literature

Author	Year	Classification
Ryle	1949	knowing "that"/"how"
Polanyi	1964	tacit/non tacit
Broudy	1977	knowing "that"/"how"/"with" scientific, positivistic/humanistic
Novak	1977	absolute/relative
Schon	1983	positivistic/relativistic; personal
Lampert	1984	intuitive/formal; systematic
Hoi	1987	declarative/procedural
Shulman	1987	Content: 1. subject-matter 2. pedagogical 3. curricular Form: 1. propositional 2. case 3. strategic
Schumacher et.al.	1987	general/particularistic
Buchmann	1987	folkways/local mores/private views/ teaching expertise

Figure 1 - Reflection and professional pedagogical knowledge - A mapping sentence

FACET 1		FACET 2		FACET 3	
At a thought level of:	analysis / synthesis / judgment	with an orientation of:	theory / practice / values	and a style of:	technical rationality / reflection in-action

FACET 4		FACET 5	
at a time of:	post-active / intra active teaching	within a content knowledge of:	subject-matter / pedagogy / curriculum

FACET 6		FACET 7	
in a form of:	proposition / case / strategy	in a manner:	intuitive / formal

will yield a reflection profile of type x